LCERPA

Laurier Centre for Economic Research & Policy Analysis

LCERPA Working paper No. 2021-3

March 2021

Rationalizing Policy Support for Zero Emission Vehicles in Canada

Randall Wigle and Istvan Kery,
Wilfrid Laurier University

Rationalizing Policy Support for Zero Emission Vehicles in Canada

Randall Wigle and Istvan Kery
Balsillie School of International Affairs
and
Lazaridis School of Business and Economics

March 18, 2021[1]

[1]Research assistance from Olivia Mullins is gratefully acknowledged.

Key Messages

1. Phase out public subsidies to private vehicle purchase and private charging stations. They are increasingly unnecessary and tend to benefit higher-income households.

2. Focus subsidies where they may be needed to build momentum as in heavy-duty trucks and buses.

3. Instead of an array of policy instruments with similar targets (CAFE regulations, GHG emissions regulations, ZEV mandates, ZEV phase-out timetables, ZEV purchase subsidies) The US and Canada should negotiate an aggressive timetable for CAFE restrictions to fall to zero. The CAFE regulations and implementation are already well understood and relatively cost-effective. With some minor tweaks they can be made even moreso.

4. Tightening US CAFE regulations is already under consideration. Given the alignment of US and Canadian climate intentions and the high degree of integration of the North American vehicle market, Canada should push for more active engagement in those discussions.

Introduction

Canada needs to significantly decarbonize road transport (private vehicles, trucks and buses) if it is to meet and eventually exceed its Paris Accord targets. The best way to achieve this is by transitioning some of Canada's support over the next 5 years. The first transition is phasing out subsidies to purchases of private ZEVs and charging stations. Because of the legacy of budget pressures likely from recent COVID 19 supports, support for decarbonization should also transition to the use of more 'flex regs' as argued by Mark Jaccard.[1] The recent focus has been on the expanded use of ZEV mandates partnered with tightening fuel economy regulations in the longer term. Both ZEV mandates and the current scheme of fuel economy regulations[2] incorporate trading mechanisms that allow compliance to be allocated more efficiently among manufacturers. These trading features make the measures more cost-effective than static regulations.

Background

Support for decarbonization has been motivated by concern about greenhouse gas emissions, but that argument for subsidies was augmented by the presence of learning curves and possible network effects[3] in various parts of the ZEV market. When the ZEV market was in its infancy these learning and network effects were likely to be strongest but as the ZEV market gains momentum over the next few years these impacts are likely to trail off markedly. Ideal policy is different when markets are novel, and have limited market penetration than when they approach having a sustainable share.[4] Private vehicles appear to no longer be in the novelty stage with several forecasts that electric ZEVs will be comparably priced to IC vehicles very soon and with sales already starting to rise.

[1] Jaccard 2020

[2] A system of Corporate Average Fuel Economy targets (CAFE) is in use in Canada and the US. First average fuel economy is calculated for the vehicles each manufacturer produces. If the average exceeds the relevant target manufacturers need to buy credits from manufacturers whose average fuel economy is better than the target. Tesla in particular generates significant revenue from selling such credits. Economists argue that this trading permits improvements in fuel economy to be achieved at a lower cost.

[3] Li, Tong, Xing, and Zhou 2017

[4] Zhou and Li 2018

Contrast this with the market for ZEV long-haul trucks, and buses. To extend the contrast even further with the market for hydrogen as a fuel for buses and long-distance trucks powered by fuel cells.

Focusing Support

The case for support is strongest in these earlier-stage markets and the challenge of decarbonizing delivery and long-haul trucking[5] dwarfs that of passengers and accounts for over 40% of on-road emissions. Since the challenge here is greater and the market is less mature there may be a more compelling argument for subsidies initially being a large part of the package. On the good side a significant share of the benefits are likely to get passed on to households.[6]

Kim and Smith 2020 lays out a plan for collaborative planning to decarbonize trucks. To be more specific — this approach should increasing include more focus on smart regulations to reduce the budget cost across several levels of government. The report suggests targets for ZEV trucks but the implication is that those would be achieved in part through purchase supports. There's no reason that targets could not be incorporated into some type of mandate or even better CAFE style regulations applied to delivery and long-haul trucks.

The federal iZEV program continues to provide purchase subsidies for a range of vehicles. These should be phased out as soon as possible. The Ontario NDP recently released a Green New Democratic Deal which promises to support ZEV adoption. That plan should not include ZEV purchase subsidies.

Budget Costs

Concern will *soon* turn to reigning in Canada's budget deficit. So although a case could be made for past cash supports for private ZEV purchases that case is likely to be weakened by the reality of scarcer public funds. Further as costs of electric vehicles fall relative to IC vehicles it will become increasingly anachronistic to be subsidizing private purchasers of these vehicles. An added

[5]Carrara and Longden 2017

[6]This should be true both in terms of improved air quality but also the reduced cost of 'cleanly-delivered' goods.

concern is that subsidies to date have gone to higher-income households[7] who were more easily convinced to purchase ZEVs. Given scarce funds it makes sense to consider the equity impacts of support for private ZEVs relative to support for decarbonizing heavy trucks and transit where the benefits are likely to be more widely spread.

Phasing out purchase subsidies for private vehicles and charging stations does not preclude support for further expansion of ZEVs. Subsidies should be progressively replaced with tighter targets for fuel economy regulations (negotiated in consultation with the US). Tightening of the CAFE regulations should involve a date in the near future when IC vehicles will no longer be permitted in the market for new private vehicles.

Although ZEV mandates are relatively cost-effective it's unclear what advantage comes from bearing the administrative costs of the CAFE and ZEV mandates. This will become progressively more important as targets tighten. Ideally the two somewhat overlapping[8] instruments can be replaced by an increasingly strict CAFE-style fuel economy regulation. Further, while many jurisdictions have announced IC phaseout dates, the best way to implement these is via an aggressive path of tightening of CAFE[9] regulations. There is no reason for yet another policy instrument.

Merging ZEV mandates and IC phaseout dates into the existing CAFE regulations into one GHG/CAFE should significantly reduce the administrative costs as well as align incentives more precisely with what matters.[10] To serve the emission reduction goals required CAFE regulation will also need to phase out the platform base for calculations that favours larger vehicles.

While the case for subsidy supports for trucks and buses is stronger, one can also imagine transitioning in the longer term to relying more heavily on CAFE-style regulation on heavy duty vehicles as already exists in the US.

Finally, Canada has included US fuel efficiency standards by reference for some time. Given the alignment of climate intentions between Canada and the US as well as the deep integration of the North American auto industry and markets, Canada should lobby for more active involvement in revising US CAFE regulations in future.

[7] Borenstein and Davis 2015; Davis 2019

[8] Irvine 2017

[9] Or if necessary CAFE style GHG regulations.

[10] Wigle 2019 argues that the marginal cost of emission reductions from EV subsidies are higher than via CAFE-type fuel economy regulation.

References

Borenstein, S. and L. W. Davis (2015, July). The distributional effects of U.S. Clean Energy Tax Credits. Working Paper 262, Energy Institute at Haas. Published in the NBER Tax Policy and the Economy, University of Chicago Press: 30(1), 191–234 (2016).

Carrara, S. and T. Longden (2017, February). Freight futures: The potential impact of road freight on climate policy. Working Paper 8.2017, Fondazione Eni Enrico Mattei.

Davis, L. W. (2019, June). Evidence of a homeowner-renter gap for electric vehicles. *Applied Economics Letters 26*(11), 927–932.

Holland, S. P., E. T. Mansur, and A. J. Yates (2020, February). The electric vehicle transition and the economics of banning gasoline vehicles. Working Paper 26804, National Bureau of Economic Research.

Irvine, I. (2017, March). Electric vehicle subsidies in the era of attribute-based regulations. *Canadian Public Policy 43*(1), 50–60.

Jaccard, M. (2020). *The Citizen's Guide to Climate Success*. London: Cambridge University Press.

Kim, C. and C. Smith (2020, December). Building a zero-emission goods-movement system: Opportunities to strengthen Canada's ZEV freight sector. Report, Pembina Institute.

Li, S., L. Tong, J. Xing, and Y. Zhou (2017). The market for electric vehicles: Indirect network effects and policy design. *Journal of the Association of Environmental and Resource Economics 4*(1).

Wigle, R. M. (2019, October). The economic case for EV supports? or: Network effects, EV pessimism and EV supports. Working Paper 2021-1, LCERPA.

Zhou, Y. and S. Li (2018, June). Technology adoption and critical mass: The case of the U.S. electric vehicle market. *Journal of Industrial Economics 66*(2), 423–480.